



## Oklahoma

Oklahoma Department of Agriculture, Food, and Forestry  
2800 N. Lincoln Blvd  
Oklahoma City, OK 73105

**Project Name** *Forest Health Monitoring: Aerial Digital Sketchmapping*

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**State Priority:** 4

### Abstract

Oklahoma Department of Agriculture, Food and Forestry currently conducts its aerial forest health monitoring (aka the annual Southern Pine Beetle detection flight) using aerial photographs from 1996, the last time that aerial photographs of Oklahoma were published. The monitoring flights use the 1996 hard images and estimate the location of potential forest pest infestations on each aerial photo. Upon returning to the office, the locations are converted to latitude and longitude. The integration of Aerial Digital Sketchmapping into Oklahoma Department of Agriculture, Food and Forestry's forest health monitoring program will significantly increase program efficiency and effectiveness. As with any new technology, training on the proper utilization of digital sketchmapping is essential to integrating the technology into regular usage. The project includes hands-on training of up to twenty (20) agency foresters by USFS Forest Health personnel on the use of Aerial Digital Sketchmapping as we conduct the 2008 Southern Pine Beetle monitoring. Specifically, the project includes (1) purchase of Aerial Digital Sketchmapping System to conduct more effective and efficient aerial detection of forest pests throughout Oklahoma, (2) conduct training on use of Aerial Digital Sketchmapping in Forest Pest Monitoring, and (3) use Aerial Digital Sketchmapping to conduct the 2008 Southern Pine Beetle detection flight for McCurtain County, Oklahoma.

### Partnering Agencies and Groups/Individuals:

Oklahoma Department of Agriculture, Food, and Forestry intends to partner with the following organizations and individuals to accomplish the desired outcomes of this project: U.S. Forest Service (Ouachita National Forest), Oklahoma Department of Wildlife Conservation, Oklahoma Department of Tourism and Recreation, U.S. Fish and Wildlife Service, Army Corps of Engineers, Weyerhaeuser Company, Plum Creek, other forest landowners.

**Project Location:** Initially, project focuses on southeastern Oklahoma, but of benefit Statewide

**Expected Completion Quarter:** Q3 2009

**Total Federal Funding Request:** \$24,013

**Total Proposal Budget:**

Project Expenditures	Organizations		
	Grant	State	Total
Aerial Digital Sketch Mapping	\$7,500		\$7,500
Personnel	\$9,600	\$19,900	\$29,500
Travel	\$2,800		\$2,800
<i>Subtotal</i>	\$19,900	\$19,900	\$39,800
IDC (20.67%)	\$4,113	\$4,113	\$8,226
<b>Total</b>	<b>\$24,013</b>	<b>\$24,013</b>	<b>\$48,026</b>

## **Project Description:**

Oklahoma currently monitors forest health on an extensive basis, relying in most cases on anecdotal reports of forest pest problems that occur across the state. One primary exception to this method is the Southern Pine Beetle (SPB) detection flight that is conducted on approximately 500,000 acres in McCurtain County on an annual basis. Even though Oklahoma has not experienced a serious outbreak of SPB in more than twenty years, frequent drought conditions and heavy stocking levels of some plantations make pine stands susceptible to this pest.

Forest health monitoring is currently being conducted using hard copies of aerial photographs that date from 1996, the last time that aerial photographs of Oklahoma were published. The forest health monitoring flights use these 1996 images and estimate the location of potential forest pest infestations on each photo. Upon returning to the office, the locations marked on the aerial photographs are converted to latitude and longitude, by comparing them to 2003 and 2006 DOQs. This method is generally considered to be antiquated and inefficient.

The integration of the Aerial Digital Sketchmapping into Oklahoma Department of Agriculture, Food and Forestry's aerial forest health monitoring program will increase considerably. Phase one of the proposed project is to purchase Aerial Digital Sketchmapping hardware and software for use in southeastern Oklahoma for SPB detection flights, but also for other health monitoring activities elsewhere in the state.

As with any new technology, training on the proper utilization of Aerial Digital Sketchmapping is essential to integrating the technology into regular usage by agency employees. Phase two of the project includes hands-on training of up to twenty (20) agency foresters by USFS Forest Health personnel on the use of the Aerial Digital Sketchmapping system as we conduct the 2008 Southern Pine Beetle detection survey of McCurtain County (500,000 acres). The following entities own forestland in McCurtain County and receive direct benefit from annual SPB detection flights:

- *Federal:* USFS-Ouachita National Forest, USFWS-Little River Wildlife Refuge, Army Corps of Engineers-Broken Bow Lake.
- *State:* Oklahoma Department of Wildlife Conservation-McCurtain County Wilderness Area, Oklahoma Department of Tourism and Recreation-Beavers Bend State Park.
- *Private:* Weyerhaeuser Company, Plum Creek, Herron Industries, various investment organizations and thousands of NIPF owners.

In addition to upgrading the State's forest health monitoring technology and methodology to current standards, and completing the 2008 SPB detection survey using the new sketchmapping system, the project will also enable use of the system on all aerial Forest Health Monitoring projects that are conducted in Oklahoma.

## **Evaluation Criteria Discussion:**

### *National and Regional Relevance:*

The use of digital sketchmapping technology in Oklahoma will improve the State's ability to monitor forest health conditions statewide in a more efficient and cost-effective manner. The ability to detect and map forest pest problems more quickly will improve agency response to develop prevention and suppression efforts where warranted. These efforts in monitoring, assessing and treating forest insect and disease problems as they are detected will contribute to the national and regional emphases to protect forests from harm and to sustain forest health.

### *Prioritization:*

The timberlands of southeastern Oklahoma support the state's largest forest products industries that provide significant levels of employment and support for the communities in the region, as well as the state's most diverse and rich forest habitats, the highest quality water and air, and a recreational paradise for millions of visitors annually that support a thriving tourism industry. Forest insects and diseases and environmental factors that could potentially threaten the health and productivity of these forests must be monitored so that problems can be detected and impacts can be minimized. The use of digital sketchmapping technologies will greatly enhance OFS abilities to monitor the condition of its most productive forestlands in southeastern Oklahoma, as well as forest-related problems elsewhere in the state.

### *Meaningful Scale:*

The use of this technology will be of benefit initially on the 500,000 acres of the most susceptible southern pine stands in McCurtain County that are currently included in the annual SPB detection flights. When pest populations are detected, the scope of the monitoring will be easily expanded to the entire southern pine range of several million acres across eastern Oklahoma, and elsewhere in the state to address other forest pest infestations. Because pests do not respect geopolitical boundaries, benefits from the project will apply to the landscape as a whole.

### *Collaboration:*

OFS has identified the following potential federal, state and private stakeholders and collaborators for this project: U.S. Forest Service-Ouachita National Forest, U.S. Fish and Wildlife Service, Oklahoma Department of Wildlife Conservation, Weyerhaeuser Company, Plum Creek, and other forestland owners in southeastern Oklahoma who benefit from the annual SPB detection monitoring. Results from digital sketchmapping monitoring can be easily shared with these major landowners in the area for rapid follow-up.

### *Outcomes:*

The project will assure accurate and efficient detection of forest pest outbreaks in Oklahoma and annual determination of Southern Pine Beetle damage and treatment needs. The current manual system is less accurate and more time-consuming. One major outcome of the project will be 20 agency foresters who are trained in the use of the new technology and methods for aerial detection flights. Those currently conducting these flights have received no formal training.

### *Technology:*

This project will assist Oklahoma in maintaining and supplying geospatial information on forest pest monitoring and forest health response needs. Results of monitoring will be easily analyzed and shared with key stakeholders, and displayed for decision-makers and the general public to raise awareness and stimulate follow-up action.

### *Integrated Delivery:*

This improvement in forest health monitoring will aid agency foresters in including relevant forest health recommendations in Forest Stewardship Plans. Where problem areas are found, foresters will be able to target the use of SPB prevention cost-share funding for treatment of stands at risk.

**SGSF Compe Process:**

State Forest Resource Assessment and Response Plan Development

The Aerial Digital Sketchmapping system will be useful for many years. Of forest managers capable of using the system for BLM

The Sketchmapping system will be utilized the first year after the system is installed and will be completed the 2nd year.